

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Stephen E. Terry

Application No.: 10/082,844

Confirmation No.: 8107

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For: SYNCHRONIZATION OF TIMING
ADVANCE AND DEVIATION

Group: 2616

Examiner: Christine Y. Ng

Our File: I-2-0160.2US

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**ARGUMENTS ACCOMPANYING PRE-APPEAL BRIEF
REQUEST FOR REVIEW**

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Commissioner for Patents
P.O. Box 1450
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Sir:

A Pre-Appeal Brief Review is hereby requested in this patent application in this 2nd Appeal; the 1st Appeal was mooted by the issuance of a further Action on November 2, 2006. As explained below, the currently cited art is even less relevant than the art withdrawn after the 1st Appeal.

Pending claims 1-4 specify methods and apparatus for effectuating timing adjustments in formatted wireless communications by the novel use of a Connect Frame Number. For example, claim 1 specifies:

receiving communication data within system time frames including **a timing advance signal which include** timing advance data and **a Connect Frame Number specifying a specific frame for effectuating a timing adjustment**; and

adjusting uplink transmission timing of the mobile terminal in response to timing advance data in the received timing advance signal **commencing in the time frame specified in the Connect Frame Number of the received timing advance signal.**
(emphasis added)

Timing adjustments are required to maintain synchronization with respect to when communication transmission (TX) and reception (RX) occurs, since the time it takes a signal to traverse between a base station (BS) and a Mobile Terminal (MT) can change during the course of a wireless communication.

The inventor recognized a problem in the manner in which timing adjustment had been conventionally made, since the conventional method permitted ambiguity as to when a timing adjustment was actually made. The use of the connect frame number signal in connection with timing adjustment has enabled a BS know exactly with respect to which timeframe a new evaluation should start to determine if a further timing adjustment is needed.

As explained in the present application, modern communications are processed at such high speeds that the time it takes for wireless signals to travel between BSs and MTs becomes significant. If a first time slot TS1 is used for downlink TX and a second next timeslot TS2 is used for uplink TX, after a base station transmits in a TS1 of a timeframe, it will immediately listen for MT transmissions in the TS2 of that timeframe. However, in order for the MT transmission to reach the BS at the start of TS2 (from the BS's perspective), the MT must transmit at a time before the start of TS2 relative to the BS. How much in advance is dependent upon how long it takes the signals to travel which will vary as

the MT moves from one location to another and in some cases due to atmospheric or other conditions.

Claims 1-4 stand finally rejected under § 102 as being anticipated by United States Patent 5,872,820 ("Upadrasta"). However, Upadrasta has nothing to do with the claimed timing adjustments which effect when in time transmissions are sent. Upadrasta is directed to synchronizing the timeframe reference numbering between a mobile terminal and a base station. As stated in the Summary of Upadrasta:

The invention provides a method and apparatus for **synchronization of frame numbers** between a base station sub-system and a mobile station. ... The amount of time lag is added to the mobile frame number counter of the mobile station **so that the mobile frame number counter is synchronized** with the base station sub-system.
(Bold Emphasis added)

As explained in Upadrasta, both BSs and MTs conventionally track timeframes based on consecutive number designations. For a given communication between a MT and a BS, the first timeframe of the communication may be designated in the BS as #15, but in the MT may be designated as #6 even though it is the same timeframe. Accordingly, the BS transmission in TS1 of timeframe #15 is received in TS1 of the MT's timeframe #6 and the transmission of the MT in TS2 of its timeframe #6 is received in TS2 of the BS's timeframe #15.

If there is no adjustment of the timeframe numbering from either BS or MT perspective, the difference in the respective reference numbering of the timeframes will remain the constant. In the above example, this means that the BS

transmission in TS1 of timeframe #16 is received in TS1 of the MT's timeframe #7 and the transmission of the MS in TS2 of its timeframe #7 is received in TS2 of the BS's timeframe #16; the BS transmission in TS1 of timeframe #17 is received in TS1 of the MS's timeframe #8 and the transmission of the MS in TS2 of its timeframe #8 is received in TS2 of the BS's timeframe #17...etc.

Upadrasta provides for synchronizing the timeframe reference numbering, so that the BS and MT use the same timeframe reference number for the same timeframe. Employing the teachings of Upadrasta in the above example, the BS signals to the MT in the BS's TS1 transmission of the BS's timeframe #15 that the BS refers to that timeframe as #15. That BS transmission is received by the MT in TS1 of the timeframe which the MT was referencing as #6. Upadrasta teaches to then calculate the difference between the BS's reference #15 and MT's reference #6 to come up with what Upadrasta misdescriptively refers to as the "time lag", in this case 9. Accordingly, the MT adds 9 to the MT's next timeframe's reference number so that instead of being identified as #7 it is identified as #16, thereby matching ("synchronizing") the time frame reference numbering used by the MT to that being used by the BS.


There is no teaching in Upadrasta to adjust the relative time when the MT makes its transmissions. Upadrasta simply teaches how to change the MT's reference number for the time frame. The claimed uplink timing adjustment is not taught by Upadrasta.

Once the respective BS and MT timeframe reference counters in Upadrasta are producing with the same reference numbers for the same timeframes, the Upadrasta process is finished. There is nothing disclosed in Upadrasta about adjusting when the MT transmits in, for example, a TS2 so that it is received without any time delay by the BS.

Upadrasta does not address transmission timing adjustments. There is no teaching of retarding or advancing when MS transmissions are made with respect to a timeslot of a timeframe. Accordingly, claims 1-4 are not anticipated by and patentably define over Upadrasta. For the above reasons, withdrawal of the rejection of claims 1-4 over Upadrasta and allowance are respectfully requested.

Respectfully submitted,

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